Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Method defining a packing configuration for a plurality of two dimensional (2D) objects in a target plane, comprising the computer generated steps of:

A. generating signals defining each of said 2D objects with respect to an object coordinate system having orthogonal axes X_0 and Y_0, in terms of a plurality of points representative of boundary points on said objects,

B. associating two of said objects to define an object pair,

C. generating a nest signal representation of said objects of said object pair nested with respect to a nest coordinate system having orthogonal axes X_N and Y_N, to define a plurality of close-packed candidate nests in which the pairwise positions of two said objects of each candidate nest are characterized by relatively small planar spaces between the respective objects,

D. selecting a subset of said candidate nests in accordance with predetermined nest criteria,

E. for each of said selected candidate nests, generating a tile signal representative of two such nests tiled with respect to a tile coordinate system having orthogonal axes X_T and Y_T, said tiling steps including the sub steps of:

i. ~~I.~~ generating a primary tile signal representative of said two nests tiled with respect to said X_T axis by translating said nests with relative motion in the direction of said X_T and Y_T axes, to define a plurality of candidate primary tiles in which the pairwise positions of said two nests of each candidate primary tile are characterized by relatively small planar spaces between said nests,

ii. selecting a subset of said candidate primary tiles in accordance with predetermined primary tile criteria,

iii. for each of said selected primary tiles, generating a secondary tile signal representative of a nest and said primary tile tiled with respect to said Y_T axis by translating said nest with respect to said primary tile with relative motion in the direction of said X_T and Y_T axes, to define a plurality of candidate secondary tiles in which the pairwise positions of said nest and

said primary tile are characterized by relatively small planar spaces between said nest and the nests of said primary tile,

iv. selecting one of said candidate secondary tiles in accordance with predetermined secondary tile criteria, thereby defining the optimal nest and primary tile, said optimal nest defining said packing configuration.

2. (Original) The method according to claim 1 comprising the further steps of:

F. generating an initial tile signal representative of an initial secondary tile positioned in said target plane at a position other than adjacent the boundary of said target plane, and

G. generating an area packing signal representative of said initial tile as augmented additional secondary tile extending successively from said initial secondary tile in the direction of each of said X_T, and Y_T axes, whereby adjacent secondary tiles are substantially identically pairwise configured in said target plane in the direction of said X_T and Y_T axes.

3. (Original) A system for defining a packing configuration for a plurality of two dimensional (2D) objects in a target plane, comprising:

A. means for generating signals defining each of said 2D objects with respect to an object coordinate system having orthogonal axes X_0 and Y_0, in terms of a plurality of points representative of boundary points on said objects,

B. means for associating two of said objects to define an object pair,

C. means for generating a nest signal representation of said objects of said object pair nested with respect to a nest coordinate system having orthogonal axes X_N and Y_N, to define a plurality of close-packed candidate nests in which the pairwise positions of two said objects of each candidate nest are characterized by relatively small planar spaces between the respective objects,

D. means for selecting a subset of said candidate nests in accordance with predetermined nest criteria,

E. tiling means operative for each of said selected candidate nests, for generating a tile signal representative of two such nests tiled with respect to a tile coordinate system having orthogonal axes X_T and Y_T, said tiling means including:

i. means for generating a primary tile signal representative of said two nests tiled with respect to said X_T axis by translating said nests with relative motion in the direction of said X_T and Y_T axes, to define a plurality of candidate primary tiles in which the pairwise positions of said two nests of each candidate primary tile are characterized by relatively small planar spaces between said nests,

ii. means for selecting a subset of said candidate primary tiles in accordance with predetermined primary tile criteria,

iii. means operative for each of said selected primary tiles, for generating a secondary tile signal representative of a nest and said primary tile tiled with respect to said Y_T axis by translating said nest with respect to said primary tile with relative motion in the direction of said X_T and Y_T axes, to define a plurality of candidate secondary tiles in which the pairwise positions of said nest and said primary tile are characterized by relatively small planar spaces between said nest and the nests of said primary tile,

iv. means for selecting one of said candidate secondary tiles in accordance with predetermined secondary tile criteria, thereby defining the optimal nest and primary tile, said optimal nest defining said packing configuration.

4. (Currently Amended) The system according to claim 3 ~~1~~ further comprising:

F. means for generating an initial tile signal representative of an initial secondary tile positioned in said target plane at a position other than adjacent the boundary of said target plane, and

G. means for generating an area packing signal representative of said initial tile as an augmented additional secondary tile extending successively from said initial secondary tile in the direction of each of said X_T, and Y_T axes, whereby adjacent secondary tiles are substantially identically pairwise configured in said target plane in the direction of said X_T and Y_T axes.

5. (Original) Method of defining a packing configuration for a plurality of three dimensional (3D) objects in a target volume, comprising the computer generated steps of:

A. generating an object signal defining each of said 3D objects with respect to an object coordinate system having orthogonal axes X_0, Y_0 and Z_0, in terms of a plurality of points representative of boundary points on said objects,

B. associating two of said objects to define an object pair,

C. generating a nest signal representative of said objects of said object pair nested with respect to a nest coordinate system having orthogonal axes X_N, Y_N and Z_N, to define a plurality of close-packed candidate nests in which the pairwise positions of said objects of each candidate nest are characterized by relatively small volumetric spaces between the respective objects,

D. selecting a subset of said candidate nests in accordance with predetermined nest criteria,

E. for each of said selected candidate nests, generating a tile signal representative of two of said nests tiled with respect to a tile coordinate system having orthogonal axes X_T, Y_T and Z_T, said tile generating step including the sub steps of:

i. generating a primary tile signal representative of said two nests tiled with respect to said X_T axis by translating said nests with relative motion in the direction of said X_T, Y_T and Z_T axes, to define a plurality of candidate primary tiles in which the pairwise positions of said two nests of each candidate primary tile are characterized by relatively small volumetric spaces between said nests,

ii. selecting a subset of said candidate primary tiles in accordance with predetermined primary tile criteria,

iii. for each of said selected primary tiles, generating a secondary tile signal representative of one of said nests of said primary tiles and said primary tile tiled with respect to said Y_T axis by translating said nest with respect to said primary tile with relative motion in the direction of said X_T, Y_T and Z_T axes, to define a plurality of candidate secondary tiles in which the pairwise positions of said nest and said primary tile are characterized by relatively small volumetric spaces between said nest and the nests of said primary tile,

iv. selecting one of said candidate secondary tiles in accordance with predetermined secondary tile criteria,

v. for each of said selected secondary tiles, generating a tertiary tile signal representative of two of said secondary tiles tiled with respect to said Z_T axis by translating said secondary tiles with respect to each other with relative motion of in the direction of said X_T, Y_T, and Z_T axes to define a plurality of tertiary tiles in which the pairwise positions of said secondary tiles are characterized by relatively small volumetric spaces between said secondary tiles,

vi. selecting one of said tertiary tiles from said candidate tertiary tiles in accordance with predetermined tertiary tile criteria, thereby defining an optimal nest of said primary tile and said secondary tile, said optimal nest defining said packing configuration.

6. (Original) The method according to claim 5 comprising the further step of

F. generating an initial tile signal representative of an initial tertiary tile positioned in said target volume at a position other than adjacent the boundary of said target volume, and

G. generating a volume packing signal representative of said initial tile as augmented additional tertiary tiles extending successively from said initial tertiary tile in the direction of each of said X_T, Y_T, and Z_T axes, whereby adjacent tertiary tiles are substantially identically pairwise configured in said target volume in the direction of said X_T, Y_T, and Z_T axes.